Begin

245

Koganer, A.I.

L 27617-66 EWT(1)/T RO/JK

ACC NR: AP6018417 SOURCE CODE: UR/0240/65/000/012/0054/0057

19
B

AUTHOR: Kopanov, A. I.

ORG: Ufa Scientific Research Institute of Hygiene and Occupational Diseases (Ufimskiy nauchno-issledovatel'skiy institut gigiyeny i professional'nykh zabolevaniy)

TITLE: Using the tissue vital staining method in the determination of standards of atmospheric pollution

SOURCE: Gigiyena i sanitariya, no. 12, 1965, 54-57

TOPIC TAGS: rat, air pollution, ethylene glycol

ABSTRACT: The authors investigated by means of the vital staining method the functional state of the tissues of three groups of white rats exposed for 60 days to atmosphere containing relatively low concentrations of the vapors of ethylene glycol (75, 15 and 3 mg/m^3), to determine the threshold limit for this substance. The rats were intraperitoneally injected with a 0.5% solution of neutral red at the rate of 0.1 cc per 50 g body weight. Half an hour after the injection of the dye one half of the animals in each group was decapitated to determine the build-up factor. The other half was killed after 2 hours in order to determine the elimination factor, with subsequent determination of the trophic potential of the tissues. In the animals that breathed an atmosphere containing 75 mg/m^3 of ethylene glycol, the trophic potential of

Card 1/2 UDC: 614.72-074.543.9

KOPANEV, A.I

30-8-37/37

AUTHOR: None Given

TITLE: New Books (Novyye knigi).

PERIODICAL: Vestnik Akademii Nauk SSSR, Vol. 27, Nr 8, 1957, pp. 122-126 (USSR)

ABSTRACT: Vavilov, N.I., The World's Reserves of all Types of Grain, of Flax, and all Species of Beans. Their Selection and Use. Moscow 1937, 462 pp., with illustrations, 3000 copies. Price 29 Roubles, 45 Kop. A basic system for the classification of cultivated plants. A survey comprising 95 agro-ecological regions of the earth.

The Fauna in the USSR and its Neighbouring Countries. IX.Vol: The Different Species of Whales. Author: Tomilin, A. G., Moscow 1957, 756 pp., 2500 copies, price 49 Roubles 60 Kop. Collected material on results obtained by research, expeditions of whalers in the waters of the Aleutes and the Baring Sea. Special expeditions.

Report on the Expedition Undertaken by the Aral-Kaspian Expedition. Edition VII: Agriculture on the Lower Amu-Darya, Moscow 1957, 222 pp., with illustrations, 1300 copies, price 13 Roubles 10 Kop. Description of Results Obtained by Expeditions in 1951/1953

New Books

30-8-37/37

The Development of Tea Plantations in Azerbaydzhan, Moscow, 1957, 410 pp. 850 copies, price 25 Roubles 25 Kop.

Works on the General Perspectives of Development of Tea Cultures in Subtropical Regions.

Kusnetsov, B. G.: The Bases of the Theory of Relativity and of Quantum Mechanics, published by the Institute for the Research of the History of Natural Science and Technology, 1957, 328 pp. 6000 copies, price 13 Roubles 50 Kop.

Works carried out by the Institute for the Research of the History of Natural Science and Technology, Moscow 1957, 532 pp. 3000 copies, 23 Roubles.

Works by S. I. Vavilov (on optics, on the work of Lomonosov and Newton. Several hitherto unpublished works by Vavilov and his bibliography).

Kopanev, A. I., The Population of St. Petersburg at the Beginning of the XIX Century. Published by the Library of the AN.

S. P. Luppov: The History of the Development of St. Petersburg in the first quarter of the XVIII Century. Published by the library

Card 2/8

KOPANEV, E.S., starshiy inzhere (Frunze)

Centralized pickup and delivery of freight. Zhel. dor. transp. 43 no. 1:65-66 Ja '61. (MIRA 14:4)

1. Frunzenskoye otdeleniye Kazakhskoy dorogi.
(Railroads—Freight)

KOPANEV, German Viktorovich; POPOV, V.I., kand.tekhn.nauk, otv.red.; VOLYNSKAYA, V.S., red.izd-va; YEGOROVA, N.F., tekhn.red.

[Underground and surface waters of the Buryat A.S.S.R. as a source of agricultural water supply] Podzemnye i poverkhnostnye vody Buriatskoi ASSR kak istochnik sel'skokhoziaistvennogo vodosnabzheniia. Moskva, Izd-vo Akad.nauk SSSR, 1960. 150 p. (MIRA 13:9)

(Buryat-Mongolia--Water supply, Rural)

KOPANEV, I.D.

Influence of forest belts on the retention of snow. Meteor.i gidrol. no.3:47-49 Mr '53. (MLRA 8:9)

1. Glavnaya geofizicheskaya observatoriya im. A.I.Voyeykova, Leningrad.
(Snow) (Forest influences)

KOPANEV, I.D.

"Influence of Forest Belts Upon the Retention of Snow."

SO: "Proolems of Agricultural and Forest Climatology." No 44(106), 1954, page 113.

KOPANEV, I.D., kandidat geograficheskikh nauk; BUDYKO, M.I., doktor, fiziko-matematicheskikh nauk; MAKSIMOVA, I.G., redaktor; BRAYNINA, M.I., tekhnicheskiy redaktor

[Effect of shelterbelts on the distribution of snow cover in the arid area of the European part of the Soviet Union] Vliianie lesnykh polezashchitnykh polos na raspredelenie sneshnogo pokrova v zasushlivoi zone evropeiskoi territorii SSSR. Pod red. M.I. Budyko. Leningrad, Gidrometeorologicheskoi izd-vo, 1955. 65 p.
(Snow) (Windbreaks, shelterbelts, etc.) (MLRA 9:1)

KOPANEV, I-D

3(7) PHASE I BOOK EXPLOITATION SOV/1732

Leningrad. Glavnaya geofizicheskaya observatoriya

Metodika meteorologicheskikh nablyudeniy (Methodology of Meteorological Observations) Leningrad, Gidrometeoizdat, 1956. 153 p. (Series: Its: Trudy, vyp. 61 /123/ 1,400 copies printed.

Sponsoring Agency: USSR. Glavnoye upravleniye gidrometeorologicheskoy sluzhby

Ed. (title page): Z.I. Pivovarova, Candidate of Geographical Sciences; Ed. (inside book): Ye. I. Oksenova; Tech. Ed.: K.F. Shumikhin.

PURPOSE: This collection of articles is intended for meteorologists serving with the hydrometeorological network in the Soviet Union.

COVERAGE: The publication contains scientific articles on the methods of meteorologic observations and on the procedure of testing meteorological instruments. The possibility of reducing the errors

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KOPANEV, I.D.

49-4-20/23

AUTHOR: Kopanev, I. D.

TITLE: Temperature and humidity of the air above dried out marshland. (Temperatura i vlazhnost' vozdukha na osushennom bolote).

PERIODICAL: Izvestiya Akademii Nauk, Seriya Geofizicheskaya, 1957, No.4, pp. 548-551 (USSR)

ABSTRACT: In view of the extensive efforts to put under cultivation dried out marshland, the author believes that availability of quantitative data on the hydrometeorological regime in such dried out marshes is of considerable interest. In this paper he describes the features of the summer regime of the temperature and the air humidity above such dried out marshland on the basis of material collected in the summer of 1955 by an expedition of the Chief Geophysics Observatory (Glavnaya Geofizicheskaya Observatorii). The region under consideration is a plain consisting mainly of peat layers with thicknesses of up to 4 m. For comparison, quantitative data on the temperature and humidity of the air are given for dry land and for two peat-bog fields which were dried by means of internal drainage during a period of four years. All the investigated fields consisted of grassland. The numerical data are entered in tables and on the basis of

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KOPANEV I.D.

(10)

PHASE I BOOK EXPLOITATION SOV/3606

Nauchnaya konferentsiya po problemam meteorologii Antarktiki, Moscow, 1959

Tezisy dokladov (Theses of Reports at the Scientific Conference on Meteorological Problems in Antarctica, Moscow, 1959) Moscow, Gidrometeoizdat (Otd-niye) 1959. 47 p. 1,000 copies printed.

Ed.: G.G. Grinzak; Tech. Ed.: L.N. Zarth.

PURPOSE: The publication is intended for meteorologists, particularly for those interested in the climatology of Antarctica.

COVERAGE: This book contains summaries of thirty-five reports presented at the Scientific Conference on Meteorological Problems in Antarctica, held in Moscow, October 26 to 28, 1959. The summaries are arranged in four groups: (1) general problems of the geography of Antarctica; (2) atmospheric circulation; (3) radiation balance, heat balance, climate and special features of individual elements; (4) methods of observation and measurement. No personalities are mentioned. There are no references.

PART III. RADIATION BALANCE, HEAT BALANCE, CLIMATE, AND THE CONDITION OF INDIVIDUAL ELEMENTS

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KOPANEV, I.D.

P.2

PHASE I BOOK EXPLOITATION SOV/3603
SOV/2-M-96

Leningrad. Glavnaya geofizicheskaya observatoriya

Voprosy metodiki meteorologicheskikh nablyudeniy i nablyudeniya v Antarktide. (Problems of Meteorological Observation Methods and of Observations in Antarctica) Leningrad, Gidrometeoizdat, 1959. 105 p. (Series: Its: Trudy, vyp. 96) Errata slip inserted. 1,200 copies printed.

Sponsoring Agency: U.S.S.R. Glavnoye upravleniye gidrometeorologicheskoy sluzhby pri Sovete Ministrov.

Ed. (Title page): Z.I. Pivovarova, Candidate of Geographical Sciences; Ed. (Inside book): T.V. Ushakova; Tech. Ed.: N.V. Volkov.

PURPOSE: The publication is intended for meteorologists working in offices of the Hydrometeorological Service and in hydrometeorological stations.

COVERAGE: This is a symposium of 11 articles, published as No. 96 of the Transactions of the Main Geophysical Observatory imeni A.I. Voyeykov. Several articles are devoted to special features in the distribution of meteorological

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elements and the radiation condition in the USSR and in Antarctica. Other articles analyze methods of meteorological and actinometric observations and the processing of their results. References are given at the end of each article.

TABLE OF CONTENTS:

KOPANEV, I.D., kand. geograf. nauk

Formation of the snow cover in Antarctica. Inform. biul. Sov. antark. eksp. no.5:32-34 '59. (MIRA 12:10)

1.Glavnaya geofizicheskaya observatoriya.
(Antarctic regions--Snow)

KOPANEV, I.D., kand.geograf.nauk

Radiation balance in Eastern Antarctica. Inform.biul. Sov.antark.ekesp. no.6:27-29 '59. (MIRA 12:11)

1. Glavnaya geofizicheskaya observatoriya.
(Antarctic regions--Solar radiation)

KOPANEV, I.D., kand. geograf. nauk

Fogs and snow haze in Antarctica. Inform. biul. Sov. antark. ekisp. no.10:18-19 '59 (MIRA 13:3)

1. Glavnyy geofizicheskaya observatoriya.
(Antarctic regions--Atmospheric transparency)

KOPANEV, I.D., kand.geograficheskikh nauk

Blizzards in Antarctica. Inform.biul.Sov.antark.eksp. no.13:21-24 '59. (MIRA 13:8)

1. Glavnaya geofizicheskaya observatoriya.
(Antarctic regions--Blizzards)

PHASE I BOOK EXPLOITATION SOV/4366

Kopanev, Ivan Dmitriyevich

Snezhnyy pokrov antarktidy (The Snow Cover of Antarctica) Leningrad, Gidrometeoizdat, 1960. 142 p. 1,200 copies printed.

Sponsoring Agencies: Glavnaya geofizicheskaya observatoriya imeni A. I. Voyeykova; Glavnoye upravleniye gidrometeorologicheskoy sluzhby pri Sovete ministrov SSSR.

Resp. Ed.: V. M. Shapayev; Ed.: V. S. Protopopov; Tech. Ed.: A. N. Sergeyev.

PURPOSE: This book is intended for meteorologists and other specialists concerned with the study of the snow cover in polar regions.

COVERAGE: The book discusses the formation and characteristics of the Antarctic snow cover. The author describes its physical, mechanical, radiation, thermal and other characteristics and discusses the interrelationship between the processes of its formation and the heat and moisture balance in the atmosphere. The effect of the snow cover on the meteorological regime of

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S/010/60/000/006/003/004
A053/A130

3.5100

AUTHOR: Kopanev, I.D.

TITLE: Turbulent heat exchange

PERIODICAL: Izvestiya Akademii nauk SSSR, seriya geograficheskaya, no. 6, 1960, 85 - 90

TEXT: The article deals with the results of experimental investigations pertaining to the turbulent heat exchange between the atmosphere and the snow covered surface at "Mirnyy". The article, based on the work conducted by the author during the 2nd Antarctic expedition in 1957 - 1958, aims at giving a qualitative appraisal of the turbulent heat exchange, exposing its peculiarity and changeability. The plateau, on which the observation instruments were installed, constituted an ice field covered with 85 cm of snow. Air temperatures were taken at 0.25, 0.5, 1.0, 2.0, 5.0 and 10 m; wind velocity was measured at 0.25, 0.5, 1.0, 2.0 and 5.0 m; temperature and relative humidity of the air were measured at 0.5 and 2.0 m. The following is the analysis of the material of gradient observations, which feature the thermic processes in the atmosphere close to the ground. The lower atmospheric layer is under influence of special conditions:

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21958

Turbulent heat exchange

S/010/60/000/006/003/004
A053/A130

The top underground layer constitutes a field of ice and snow, which hardly ever changes its temperature and, therefore, contributes to a large extent to lowering the temperature of the air near the ground. Thus the air closest to the ground is coldest. Table 1 gives a vertical profile of the air temperature at Mirnyy in 1957. The cooling effect of the snow surface is such, that even the considerable speed of the wind does not bring about a change of conditions. The gradient of air temperature has, therefore, a downward trend the whole year round, attaining a maximum during the winter and a minimum in the summer. As far as the wind regime in the coastal region is concerned, it has a distinctly anticyclonic character, connected with the antarctic anticyclone over the snow-ice plateau and the belt of low pressure of the portion adjacent to the cean. This circulation is backed up by the inflow of chilled air from the continent and obtains the downward movement by force of gravity along the slope toward the sea. Around the coastal and continental stations south-easterly and easterly winds predominate during the year, they are also the strongest. Table 2 gives the wind velocities during summer and winter in Mirnyy at different altitudes. Up to an altitude of 2 m the wind velocity shows little change, it increases rapidly only after 2 m; however, the increase in speed only takes place as far as the lower layers of the troposphere. Turbulence, which is the basic factor of atmospheric heat exchange,

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S/010/60/000/006/003/004
A053/A130

Turbulent heat exchange

in which Δt is the difference in temperatures at the altitudes z_2 and z_1; U_1 is the wind velocity at altitude z_1. Other tables show the intensity of heat exchange between atmosphere and ground, the underlying layer per month in Mirnyy and monthly totals of the turbulent heat exchange between the atmosphere and the underlying ground layer in Mirnyy in 1957. From these tables it is evident that in view of cyclonic activity and advection of warmer air masses in coastal regions the intensity of thermic flow in winter is twice or three times as great as in summer. A second peculiarity consists in the fact that the turbulent thermic flow is directed downward during the whole year. The intensity of turbulent flow is in Mirnyy four to five times greater than near Leningrad under a thick cover of snow. The author concludes that as a result of the experimental data obtained, it can be affirmed that: 1) the distribution of temperatures and the vertical velocity in the atmosphere adjacent to the ground at the antarctic coast conform to logarithmic rules. Temperature gradients in conjunction with high wind velocities are comparatively small in terms of absolute values; 2) the influence of the snow cover on the thermic and wind regimes is particularly pronounced in the layer of atmosphere adjacent to the ground up to a height of 10 m; 3) the roughness (z_0) of the snow cover is less pronounced as compared with snow covers in more temperate latitudes of the northern hemisphere; 4) the turbulent flow in

Card 4/6

S/124/61/000/009/018/058
D234/D303

AUTHOR: Kopanev, I.D.

TITLE: Turbulent friction in the Antarctic

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 9, 1961, 79-80, abstract 9 B561 (Inform. byul. sov. antarkt. ekspeditsii, 1960, no. 17, 9-11)

TEXT: A quantitative estimation of space variability of turbulent friction in the Antarctic is given, made according to methods developed at the Glavnaya geofizicheskaya laboratoriya (Principal Geophysical Observatory). Tables of quantities, characterizing the force, with which the air stream acts on a surface unit in a time unit, are given. Turbulent friction on the Antarctic coast reaches values larger than those in the central regions. During the winter months the friction is stronger than during summer months. Values of critical magnitudes of turbulent friction are given (at which the breaking away of the particles of snow from the

Card 1/2

S/169/61/000/010/017/053
D228/D304

AUTHOR: Kopanev, I. D.

TITLE: Heat characteristics of snow in Antarctica

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 10, 1961, 51-52, abstract 10V345 (Inform. byul. Sov. antarkt. ekspeditsii, no. 22, 1960, 40-41)

TEXT: Determination of the heat- and temperature-conductivity of snow was made with the help of a thermoprobe designed by D. L. Laykhtman. The thermoprobe is a frame of insulating material with heating filaments stretched over it and two conductors with hot copper-constantan thermocouples. The heat conductivity, the temperature conductivity, and the heat capacity of the medium between the heater and the junction are determined from the retardation of the phase from a two-minute impulse and from the greatest heating that is achieved at a definite distance from the heater. Snow in the Antarctic is characterized by a low heat-conductivity,

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L 12761-63 EWT(1)/FCC(w)/BDS/ES(v) AFFTC/ESD-3 Pe-4/Pi-4/Pq-4 GW
S/169/63/000/004/010/017

69

AUTHOR: Kopanev, I. D.

TITLE: Some peculiarities in turbulent heat exchange in Antarctica

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 4, 1963, abstract 4B183 (Sb. materialy konferentsiy po itogam MGG (1960) i meteorol. izuch. Antarktidy (1959). M, Gidrometeoizdat, 1961, 312-317)

TEXT: The article includes the results of experimental work on determining turbulent heat exchange between the atmosphere and the snow surface at Mirnyy (Antarctica). Data obtained from observations of temperature gradients, air humidity, and wind velocities at heights of 0.25 to 10 meters in 1956 - 1958 were utilized in computing the qualitative characteristics. The vertical distribution of air temperatures and wind velocities obey a logarithmic law. Temperature inversions with small values of temperature gradients predominate over the snow surface during the year. The turbulent flow was directed from the atmosphere toward the underlying surface throughout the entire year.

[Abstracter's note: Complete translation.]

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S/169/62/000/004/052/103
D228/D302

AUTHOR: Kopanev, I. D.

TITLE: Peculiarities of the formation of the snow cover in Antarctica

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 4, 1962, 56, abstract 4V334 (Tr. Tbilisk. n.-i. gidrometeorol. in-ta, no. 9, 1961, 36-37)

TEXT: A qualitative estimate of the heat balance components is given together with some numerical characteristics of the snow cover in Antarctica. Throughout almost the whole year the radiation balance is negative. The heat exchange of the atmosphere with the ice surface is always positive (the flow of heat is directed to the snow cover's surface). There is little evaporation on the coast, and in most cases sublimation prevails over evaporation in central regions. Precipitation and sublimation products are the source of supply for the Antarctica ice; this equals 120 - 140 cm per annum on the coast and 35 - 55 cm per annum on the continent's central

Card 1/2

S/169/62/000/008/030/090
E202/E392

AUTHOR: Kopanev, I.D.

TITLE: The extension of solar scattering in the Antarctic

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 8, 1962, 22, Abstract 8B168. (Inform. byul. Sov. antarkt. ekspeditsii, no. 31, 1961, 31 - 34)

TEXT: Data about the extension of solar scattering, total radiation and the state of clouds in Antarctica are given. It is observed that in Antarctica, with penetration into the icecap, the extension of the solar scattering increases with increasing length of the polar day. Considerable magnitudes of total solar radiation are attained due to the high transparency of the atmosphere of the Antarctic.
[Abstracter's note: Complete translation.]

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KOPANEV, I.D., kand.geograficheskikh nauk

Role of evaporation in Antarctica. Inform. biul. Sov. antark. eksp. no.33:32-34 '62. (MIRA 16:2)

1. Glavnaya geofizicheskaya observatoriya.
(Antarctic regions—Evaporation)

KOPANEV, I.D.

Rationalization of snow-measuring observations at a hydrometeorological network. Trudy TbilNIGMI no.13:47-52 '63. (MIRA 18:8)

1. Glavnaya geofizicheskaya observatoriya im. A.I.Voyeykova.

KOPANEV, I.D.

Role of meteorological conditions in the formation of snow-ice surfaces in Antarctica. Probl.Arkt.i Antark. no.14:47-52 '63. (MIRA 16:12)

KOPANEV, I.D., starshiy nauchnyy sotrudnik

Air turbulence in the surface layer of Antarctica. Inform. biul. Sov. antark. eksp. no.38:20-23 '63. (MIRA 16:7)

1. Glavnaya geofizicheskaya observatoriya.
(Antarctic regions—Atmospheric turbulence)

KOPANEV, I.D.

Variability of the characteristics of the snow cover on the plain territories of the U.S.S.R. Trudy GGO no.160:86-98 '64. (MIRA 17:9)

KOPANEV, I.D.

Characteristics of snow transport. Izv. SO AN SSSR no.6 Ser. tekh. nauk no.2:80-87 '64. (MIRA 17:10)

1. Glavnaya geofizicheskaya observatoriya imeni A.I. Voyeykova, Leningrad.

KOPANEV, I.D.

State and prospects of improvement of network snow observations. Trudy GGO no.175:59-66 '65. (MIRA 18:8)

1. Glavnaya geofizicheskaya observatoriya im. A.I.Voyeykova, Leningrad.

KOPANEV, I.D.

Factors determining the formation of snow cover on the plains of the U.S.S.R. and their variability. Trudy GGO no.175:188-194 '65. (MIRA 18:8)

1. Glavnaya geofizicheskaya observatoriya im. A.I.Voyeykova, Leningrad.

KOPANEV, I.D.

Temperature conditions of soils during the cold season. Pochvovedenie no.6:97-103 Je '65. (MIRA 18:11)

1. Glavnaya geofizicheskaya observatoriya imeni Voyeykova. Submitted Sept. 18, 1963.

ACC NR: AP7004586 SOURCE CODE: UR/0050/66/000/008/0012/0015

AUTHOR: Laykhtman, D. L. (Professor); Kopanov, I. D. (Candidate of geographical science)

ORG: Main Geophysical Observatory (Glavnaya geofizicheskaya observatoriya)

TITLE: Basis for a snow surveying method

SOURCE: Meteorologiya i gidrologiya, no. 8, 1966, 12-15

TOPIC TAGS: snow, hydrometeorology

ABSTRACT: In recent years the Main Geophysical Observatory has been developing the principles of a method for carrying out network snow surveys. The results of this work are described, it being shown that the depth of the snow cover is a random function of coordinates and time. Formulas have been derived for computing the parameters of snow surveys, ensuring the necessary accuracy in measurement of the characteristics of the snow cover (5-10%). It has been found that in the USSR (excluding mountainous regions) in order to achieve this percentage of accuracy in determining depth and density it is necessary to have the snow-measuring profile parameters given in Table 2 (for open areas). The tabulated data were obtained from 17 administrations of the Hydro-

UDC: 551.578.467(018)

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ACC NR: AP7004586

meteorological Service. In lowland areas the length of the profile and the distances between adjacent measurements of depth and density vary in dependence on the degree of nonuniformity of deposition of the snow cover. The time intervals for making surveys in different regions vary from 5 to 40 days./ Orig. art. has: 8 formulas and 2 tables. [JPRS: 38,460]

SUB CODE: 04 / SUBM DATE: 29Dec65 / ORIG REF: 005

Card 2/2

GUBKIN, A.; KOPANEV, V.

Electret microphone. Radio no.3:54 Mr '60. (MIRA 13:6)
(Microphone)

L 10005-66 FSS-2/EWT(1)/FS(v)-3 DD/RD

ACC NR: AP6000254 SOURCE CODE: UR/0209/65/000/011/0027/0032

AUTHOR: Kas'yan, I.; Kopanev, V.; Lebedev, V.; Khlebnikov, G.; Kolosov, I.

ORG: none

TITLE: On an airplane in a state of weightlessness. Results of research

SOURCE: Aviatsiya i kosmonavtika, no. 11, 1965, 27-32

TOPIC TAGS: human physiology, space physiology, weightlessness, parabolic flight

ABSTRACT: Cosmonaut training flights in aircraft equipped with a weightlessness tank are described. Some physiological parameters of the trainees during various stages of the flight are discussed. One series of tests performed on a dynamometer showed that, compared to horizontal flights, during weightlessness the amount of maximum muscular force which can be exerted is reduced by 6—12 kg for the right hand and 4—12 kg for the left hand. This decrease in muscular force is probably connected with the decreased tonus of the skeletal muscles and functional changes in the central nervous system during weightlessness. The coordinograph, a device for measuring changes in fine coordination movements, recorded the total work time for each test, the number of errors, and the time of one movement. Although no disruption in coordination was observed when these tests were conducted during parabolic flight, most cosmonauts showed some lag in the speed of execution of motor acts. Orig. art. has: 2 figures. [JS]

SUB CODE: 06 SUBM DATE: none/

Card 1/1

YAZDOVSKIY, V.I.; KAS'YAN, I.I.; KOPANEV, V.I.

Basic problems in studying weightlessness. Probl. kosm. biol. 3:37-58 '64. (MIRA 17:6)

ACCESSION NR: AT4037696 S/2865/64/003/000/0250/0268

AUTHOR: Altukhov, G. V.; Kopanev, V. I.

TITLE: Effects of statokinetic stimuli on certain functions of the organism

SOURCE: AN SSSR. Otdeleniye viologicheskikh nauk. Problemy* kosmicheskoy biologii, v. 3, 1964, 250-268

TOPIC TAGS: Coriolis acceleration, manned space flight, rotation, electroencephalography, electrocardiography, skin galvanic reaction

ABSTRACT: A study has been made of the effects on human subjects of three types of statokinetic stimuli (quick head movements, slow rotations on a chair, and Coriolis accelerations). EKG, EEG, skin-galvanic reaction, blood pressure, and respiration rate were recorded. Subjective reports of persons tested were also taken into account. The experiments showed that the effect of statokinetic stimuli is to increase the pulse rate and blood pressure. EKG intervals shortened, and the amplitude of the T and R spikes decreased. Bioelectric changes in the cortex recorded by EEG indicated the development of adaptive processes on the part of the central nervous system. Results differed with the ability of the subject

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Card 2/2

ACCESSION NR: AP4037622 S/0216/64/000/003/0352/0368

AUTHOR: Kas'yan, I. I.; Kopanev, V. I.; Yazdovskiy, V. I.

TITLE: Circulation of the blood during weightlessness

SOURCE: AN SSSR. Izv. Seriya biologicheskaya, no. 3, 1964, 352-368

TOPIC TAGS: weightlessness, hemodynamics, circulation

ABSTRACT: The authors review data collected on weightlessness from the first flights of dogs in high altitude rockets in the 1949-1956 period to the last manned spaceflight of Bykovskiy and Tereshkova. Data collected during these high-altitude and orbital flights include pulse frequency, arterial pressure, and bioelectrical activity of the heart (EKG). An analysis of these data indicates an absence of serious disruptions of circulation of the blood. Weightlessness, whether short-term or up to 5 days in duration, causes three types of reactions. The first is a distinct reduction in pulse frequency, accompanied by a reduction of arterial pressure (sometimes lower

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ACCESSION NR: AP4037622

than at sea level). A second type manifests itself in an increase in pulse rate, and a small increase in blood pressure. The third type has no significant changes. The reduction, under weightless condition, of pulse frequency and arterial pressure accompanied by an increased lability of some vegetative indices, and a slowing down of the normalization rate of indices of functional state of the cardiovascular system can be explained by a lowering of the hydrostatic pressure of the blood (this is the direct effect of weightlessness) and a disruption in the functioning of the analyzer systems (the indirect effect of weightlessness). Orig. art. has: 7 figures and 10 tables.

ASSOCIATION: none

SUBMITTED: 28Nov63 DATE ACQ: 05Jun64 ENCL: 00

SUB CODE: LS, PH NO REF SOV: 020 OTHER: 014

Card 2/2

KOPANEV, V.I.

Secretory function of the stomach in a state of nausea due to rocking. Vest.Len.un. 10 no.10:39-43 O '55. (MLRA 9:1)
(Stomach--Secretions) (Seasickness)

27.4000

26465
S/177/60/000/008/002/002
D264/D304

AUTHOR: Kopanev, V.I., Major, Medical Services

TITLE: The problem of dark adaptation under rocking

PERIODICAL: Voyenno - meditsinskiy zhurnal, no. 8, 1960, 76 - 81

TEXT: This paper reports the results of experiments performed to determine the progress of dark adaptation under the influence of rocking movements, and the influence of short - duration illumination on the sensitivity and lability of the eye under normal conditions, and after rocking. Dark adaptation under these conditions is of great importance during night flying and driving. The experiments were carried out in a dark chamber mounted on a swing. In the control experiments there was a 25 minute primary adaptation period and a 10 minute standard illumination period (using a 25 W bulb), followed by a secondary adaptation period, during which a certain time intervals the optical rheobase, chronaxy, topaxy (threshold of spatial summation) and the critical fusion interval were measured. After 50 minutes of the secondary adaptation a bright illumination was given

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The problem of dark adaptation... S/177/60/000/008/002/002
D264/D304

(700 lux at the eye) for 1 minute. During the following 40 minutes the restoration of sensitivity was studied, using the above mentioned indices. The same indices were used under the experimental conditions, when rocking was applied at the rate of 16 - 17 per minute for 30 minutes after the standard illumination. Other conditions were the same as in the control experiments. Eleven subjects were used. The results of these experiments are shown in Figs. 1 and 2. Similar results were obtained in experiments with repeated rocking, sensitivity was reduced, and a long after - effect was observed. The author points out that, according to S.V. Kravkov, rocking acts as an indirect stimulus on the sense organ, influencing its sensitivity through the vestibular apparatus. In order to obtain a more complete picture of the changes in sensitivity the author combines the three characteristics - rheobase J, chronaxy t, and topaxy q, - in a single graph, were the logarithm of the product Jtq is shown against time. The critical fusion interval also influences the sensitivity. P.O. Makarov [Abstractor's note: No other information given] recommended the formula $L = 1000\,\mu sec/\alpha$, where L is called the lability of the sense organ, α is the critical fusion interval, as a measure of functional mobility. The experiments show that this

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VOLYNKIN, Yu.M.; YAZDOVSKIY, V.I.; GENIN, A.M.; VASIL'YEV, P.V.; GYURDZHIAN, A.A.; GUROVSKIY, N.N.; GORBOV, F.D.; SERYAPIN, A.D.; BELAY, V.Ye.; BAYEVSKIY, R.M.; ALTUKHOV, G.V.; KOPANEV, V.I.; KAS'YAN, I.I.; YEGOROV, A.D.; SIL'VESTROV, M.M.; SIMPURA, S.F.; TERENT'YEV, V.G.; KRYLOV, Yu.V.; FOMIN, A.G.; USHAKOV, A.S.; DEGTYAREV, V.A.; VOLOVICH, V.G.; STEPANTSOV, V.I.; MYASNIKOV, V.I.; YAZDOVSKIY, V.I.; KASHIN, P.S., tekhn. red.

[First space flights of man; the scientific results of the medicobiological research conducted during the orbital flights of the spaceships "Vostok" and "Vostok-2"] Pervye kosmicheskie polety cheloveka; nauchny rezul'taty mediko-biologicheskikh issledovanii, provedennykh vo vremia orbital'nykh poletov korablei-sputnikov "Vostok" i "Vostok-2." Moskva, Izd-vo Akad. nauk SSSR, 1962. 202 p. (MIRA 15:11)
(SPACE MEDICINE) (SPACE FLIGHT TRAINING)

80-92

TEXT: Both Soviet and Western literature on the subject is reviewed. The experience of G.S. Titov on the space-ship Vostok-2 with regard to weightlessness and motion sickness is analyzed in detail. Various prophylactic measures to protect against motion sickness during space flight are proposed. In the case of Titov the symptoms of motion sickness diminished when the astronaut took up an appropriate position and did not make sharp movements; they markedly diminished after he slept, and disappeared completely when the braking system of his space ship was set into operation. Conclusions: Motion sickness is one of the principal problems of space medicine. Motion sickness under weightlessness conditions is mainly

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due to a disturbance in the functional system of operation of the analyzers which participate in space orientation (vestibular, proprioceptor, interoreceptor, visual, and dermato-mechanical). It can be assumed that under certain conditions the Coriolis force may be also one of the causes of motion sickness. In the development of motion sickness the conditional reflex component is also to be reckoned with; it may produce, strengthen, weaken, or remove the state of motion sickness. Adaptation to space motion sickness is possible through the formation of a new functional system of analyzer interaction. The following factors are important in space motion sickness prevention: The selection and training of the crew, the creation of optimal conditions in the space ship cabin, pharmacological means for increasing the resistance of the body, and technical improvements in space ships. The authors stress the necessity for further study of motion sickness. There is 1 table.

KOMENDANTOV, G.L., dotsent; KOPANEV, V.I., kand.med. nauk

Current views on the genesis of motion sickness. Vest. otorin. no.1:18-23 '63. (MIRA 16:9)

1. Iz Tsentral'nogo instituta usovershenstvovaniya vrachey Ministerstva zdravookhraneniya SSSR, Moskva.
(MOTION SICKNESS)

KOPANEV, V.I., kand. med. nauk (Moskva)

Modeling of the state of motion sickness under laboratory conditions. Kaz. med. zhur. 4:64 Jl-Ag'63 (MIRA 17:2)

ACCESSION NR: AP4000985 S/0216/63/000/006/0880/0891

AUTHOR: Kas'yan, I. I.; Kopanev, V. I.

TITLE: Weightlessness and artificial gravity

SOURCE: AN SSSR. Izvestiya. Seriya biologicheskaya, no. 6, 1963, 880-891

TOPIC TAGS: weightlessness, space orientation, spacesickness, sensory disturbance, cardiovascular system, respiratory system, tachycardia

ABSTRACT: Data obtained in experiments with animals indicate the following pattern of changes in vegetative indices induced by the state of weightlessness: a tendency toward tachycardia and an increase in the respiration rate in the early stages of weightlessness. These changes were not pathological, which indicates that the organism is highly adaptable to the conditions of weightlessness. Information obtained from the flights of the Soviet cosmonauts proved that the human organism is able to tolerate weightlessness up to five days without suffering ill effects. The work capacity

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ACCESSION NR: AP4000985

of the cosmonauts was not impaired while they were strapped to their seats. However, when they left their seats and were "floating," their activity was limited practically to communicating with ground stations or with each other. All cosmonauts showed the same general pattern of response to the state of weightlessness. Exposure to weightlessness of short duration produced tachycardia and changes in the respiratory system. These functional changes gradually returned to normal under the effect of prolonged weightlessness, but the resistance to overloads was reduced. Means must be found to counteract the harmful effect of weightlessness in long-range flights. This could be done either by developing the resistance of the human organism or by technical improvement of the spaceships. Producing artificial gravity on spaceships may solve the problem.

ASSOCIATION: none

SUBMITTED: 16Feb63 DATE ACQ: 09Dec63 ENCL: 00

SUB CODE: AM NO REF SOV: 037 OTHER: 050

Card 2/2

VOLYNKIN, Yu.M.; YAZDOVSKIY, V.I., prof.; GENIN, A.M.; GAZENKO, O.G.; GUROVSKIY, N.N.; YEMEL'YANOV, M.D.; MIKHAYLOVSKIY, G.P.; GORBOV, F.D.; SERYAPIN, A.D.; BAYEVSKIY, R.M.; ALTUKHOV, G.V.; KOPANEV, V.I.; KAS'YAN, I.I.; MYASNIKOV, V.I.; TERENT'YEV, V.G.; BRYANOV, I.I.; FEDOROV, Ye.A.; FOMIN, V.S.; ARUTYUNOV, G.A.; ANTIPOV, V.V.; KOTOVSKAYA, A.R.; KAKURIN, L.I.; TSELIKIN, Ye.Ye.; USHAKOV, A.S.; VOLOVICH, V.G.; SAKSONOV, P.P.; YEGOROV, A.D.; NEUMYVAKIN, I.P.; TALAPIN, V.F.; SISAKYAN, N.M., akademik, red.; KOLPAKOVA, Ye.A., red.izd-va; ASTAF'YEVA, G.A., tekhn.red.

[First group space flight; scientific results of medical and biological studies carried out during the group orbital flight of manned satellites "Vostok-3" and "Vostok-4] Pervyi gruppovoi kosmicheskii polet; nauchnye rezul'taty mediko-biologicheskikh issledovanii, provedennykh vo vremia gruppovogo orbital'nogo poleta korablei-sputnikov "Vostok-3" i "Voskot-4." Moskva, Izd-vo "Nauka," 1964. 153 p. (MIRA 17:3)

YAZDOVSKIY, V.I.; ALTUKHOV, G.V.; BELAY, V.Ye.; YEGOROV, A.D.; KOPANEV.V.I.

Neuroemotional stress of astronauts in space flight. Izv. AN SSSR Ser. biol. no.2:306-311 Mr-Ap'64 (MIRA 17:3)

L 8825-65 EEO-2/EWG(j)/FSF(h)/FSS-2/EWG(r)/EWT(1)/FS(v)-3/EEC(k)-2/EWG(v)/EWG(a)/EWG(c) Po-4/Pe-5/Pq-4/Pac-4/Pae-2/Pl-4/Pb-4 AFTC(a)/AMD/AFTC(b)/AFETR/SSD/AEDC(a)/ESD(gs)/ESD(t)/ESD(si) TT/DD/RD/GW

ACCESSION NR: AP4041101 S/0216/64/000/005/0677/0689

AUTHOR: Kas'yan, I. I.; Kopanev, V. I.; Yuganov, Ye. M.

B

TITLE: Motor reactions during weightlessness

2

SOURCE: AN SSSR. Izvestiya. Seriya biologicheskaya, no. 5, 1964, 677-689

TOPIC TAGS: weightlessness, manned space flight, man, guinea pig, rat, parabolic flight, coordination, muscular control

ABSTRACT: The authors review 23 Soviet and 23 Western sources dealing with physiological responses to weightlessness and include photographs and tables indicating the response of man (Nikolayev, By*kovskiy, et al) and animals (dogs, guinea pigs, and rats) to parabolic and orbital flights. Tables show the motor activity and muscular coordination of human test subjects during Keplerian flights. It is concluded that weightlessness slows down motor functions, although there are no overt indications of discoordination. Orbital space flights have indicated that functions involving

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ACCESSION NR: AP4045401

detailed coordination, such as writing, are rendered more difficult under weightless conditions. Bioelectric activity of some skeletal musculature is decreased in intact animals under weightless conditions but not significantly altered in decerebrated or delabyrinthed animals. Motor disruption appears to be a function of the fixation of the organism during weightlessness. Repeated exposure to weightlessness causes a decrease in motor disturbances. For all practical purposes, the motor activity of astronauts did not change during weightlessness, when they were in a fixed position. However, in free floating conditions, even the simplest task was rendered difficult. The authors stress the need for experiments dealing with the physiological responses of man and animals to prolonged weightlessness. Orig. art. has: 3 tables and 8 figures.

ASSOCIATION: none

SUBMITTED: 28Jan64 ATD PRESS: 3107 ENCL: 00

SUB CODE: LS, PH NO REF SOV: 023 OTHER: 023

Card 2/2

YAZDOVSKIY, V.I.; KAS'YAN, I.I.; KOPANEV, V.I.

Physiological responses of astronauts to overloads and weightlessness. Izv. AN SSSR Ser. biol. 29 no.1:12-31 Ja-F'64 (MIRA 17:3)

1. Institute of Normal and Pathological Physiology, Academy of Sciences of the U.S.S.R., Moscow.

KAS'YAN, I.I.; KOPANEV, V.I.; YUGANOV, Ye.M.

Motor reactions in weightlessness. Izv. AN SSSR. Ser. biol. no.5:677-689 S-O '64. (MIRA 17:9)

L 27410-65 FSS-2/EWG(j)/EWT(1)/EWG(r)/FS(v)-3/EWG(v)/EWC(a)/EWG(c) BD
ACCESSION NR: AP5003896 S/0216/65/000/001/0010/0017

AUTHOR: Kas'yan, I. I.; Kopanev, V. I.

TITLE: On the physiological mechanisms of the effect of weightlessness on the human organism

SOURCE: AN SSSR. Izvestiya. Seriya biologicheskaya, no. 1, 1965, 10-17

TOPIC TAGS: weightlessness, physiological effect, man, space flight, central nervous system, vestibular analyzer, vegetative function, analyzer interaction

ABSTRACT: Pecularities of physiological reactions to weightlessness are examined in order to be able to better understand the mechanisms involved in the effects of weightlessness on the human organisms. It has been found that weightlessness may cause sensory illusions (hanging upside down, falling, etc.); weightlessness may affect the reception of light signals (appearance of violet aureoles around lighted objects and increased reception of colors, especially yellow); it may disrupt the coordination of movements; it may affect certain vegetative functions (reduction of the frequency of cardiac contractions, reduction of blood pressure, etc.); and it may lead to motion sickness (as it did in the case of the cosmonaut Titov). There have been only partial explanations of the mechanism of weightlessness on the

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ACCESSION NR: AP5003896

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human organism up to the present time. In studying the reactions of the cardiovascular system under conditions of weightlessness, R. M. Bayevskiy and O. G. Gazenko came to the conclusion that the circulatory system adapts itself to weightlessness in distinct stages and that the vagus nerve plays a dominant role in this adaptation. V. N. Chernov and V. I. Yakovlev feel that retardation of adaptive processes under conditions of weightlessness is the result of changes in the functional condition of the nervous centers which control circulation and respiration. V. V. Parin, O. G. Gazenko, and V. I. Yazdovskiy have concluded that sensory disruptions are due to altered afferentation from the labyrinth organ. Ye. M. Yuganov considers that weightlessness does not result in a functional "switching-off" of the otolith mechanism, but, rather, that it acts as an unusual "negative stimulant" on the otoliths. He assumes that if the effects of weightlessness can be cumulative, the cumulation of neural processes which arise may lead to the appearance of symptoms of motion sickness. I. I. Kas'yan and V. I. Kopanev feel that the effects of weightlessness on the organism should be regarded as a series of reactions. The direct effects of weightlessness begin with the "disappearance" of the weight of the body, the tissues, and the organs. This entails a reduction in the hydrostatic pressure, an increase in difficulty in expiration, disappearance of the weight of the otoliths, etc. This, in turn, causes unusual afferentation from the skin receptors, the vestibular receptors, the interoceptors, and from other analyzers.

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This change in afferentation affects the functional condition of the central nervous system and the coordinated operation of analyzers. This change in the functional condition of the central nervous system causes a change in efferentation which affects all the organs of functional systems of the organism. This results in what the authors call the indirect results of weightlessness: hemodynamic shifts, disruption of the biomechanics of external respiration, disruption of motor activity, disruption of the function of analyzers (vestibular, tactile, interoceptive, etc.), sensory illusions, development of motion sickness, and an increased vegetative lability. V. V. Baranovskiy, M. D. Yemel'yanov, and A. G. Kuznetsov have found support for the assumption that various analyzers act as parts of a single functional system by determining that vestibular-vegetative reactions became more pronounced during stimulation of proprioceptors and the visual analyzer. These findings have been supported by the work of V. N. Barnatskiy, who discovered that vegetative disorders caused by rocking were affected by changes in the functional condition of the visual, the proprioceptive, and the interoceptive analyzers. The latest data obtained indicate that, under certain conditions, an increase in the processes of inhibition can be observed in the central nervous system due to the effects of weightlessness. V. I. Yazdovskiy, I. I. Kas'yan, and V. I. Kopanev have found that, after orbital flight, Tereshkova, the Soviet female cosmonaut, showed an increase in low-frequency potentials which indicate the development of

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ACCESSION NR: AP5003896

the process of inhibition. This explains the instability of her pulse rate. It appears that the development of inhibitive processes in the central nervous system disrupt cortical control of the vegetative functions, with the result that more pronounced vegetative disruptions appear. This creates the impression that, under weightlees conditions, the tone of the parasympathetic part of the central nervous system becomes dominant because pulse frequency and blood pressure are reduced and motion-sickness symptoms develop. The authors conclude that the effects of weightlessness may be divided into direct effects which result from the disappearance of the weight of the body, tissues, and organs, and indirect effects which result from changes in the functional condition of the central nervous system and the coordination or interaction of the work of the analyzers. Orig. art. has: 1 figure. [BM]

ASSOCIATION: none

SUBMITTED: 20Sep64 ENCL: 00 SUB CODE: PH, LS

NO REF SOV: 029 OTHER: 013 ATD PRESS: 3192

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L 50344-65 EEO-2/EWG(j)/FSS-2/EWG(r)/EWT(1)/FS(v)-3/EEC(k)-2/EWG(v)/EWA(d)/
EWG(a)-2/EWG(c) Po-4/Po-5/Pq-4/Pac-4/Pae-2/Pi-4 GW/TT/DD
ACCESSION NR: AP5013308 UR/0216/65/000/003/0329/0334 58 B

AUTHOR: Yeremin, A. V.; Kas'yan, I. I.; Kolosov, I. A.; Kopanev, V. I.; Lebedev, V. I.

TITLE: The working capacity of man under conditions of weightlessness

SOURCE: AN SSSR. Izvestiya. Seriya biologicheskaya, no. 3, 1965, 329-334

TOPIC TAGS: manned space flight, Vostok 1, weightlessness, biological effect, work capacity, manned orbiting laboratory

ABSTRACT: The Vostok-1 flight showed that the working capacity of cosmonauts was sufficiently preserved in spite of extremely full schedules. On Vostok-1, K. P. Feoktistov observed stars and the aurora polaris above the visual horizon, observed the horizon, noted the stability of gas bubbles in liquid and the behavior of water in a gas medium, logged observations, photographed the surface of the earth and the heavens, conducted vestibular and psychological probes, and ate regularly. At the same time, B. B. Yegorov carried on radio-telephone communications and medical observations on himself and other

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ACCESSION NR: AP5013308

crew members. Basically he made determinations of pulse rates, muscular working ability during rhythmic finger movements, visual acuity by special charts, light sensitivity and illumination brightness by an adaptometer, ocular muscle tonus by a special prism, vestibular analyzer excitability by d-c current, and blood tests. It is likely that as the number of cosmonaut missions during space flight is increased, working ability will be somewhat decreased, especially in unfettered situations. This must be taken into consideration when planning future, more prolonged, space expeditions in which the crews will have fairly complex and full schedules. In overcoming the unfavorable effects of weightlessness on the working capacity of the crews, the following two approaches are suggested: the first approach entails increasing functional capabilities through adaptation to altered gravity; the second entails the technological perfection of spacecraft and their instrumentation. In connection with the first approach, the selection and training of cosmonauts plays a major role. Particular attention should be given to training cosmonauts to maintain their working capacities even when disruptions of analyzer functions participating in spatial orientation take place. However, it should be remembered that the functional capability

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of the human organism has its limitations. Therefore, it will be important to further perfect methods of fixing cosmonauts to their working areas, to improve control panels, increasing their reliability, etc. A radical means of ameliorating the effects of weightlessness will be the construction of spacecraft with artificial gravity although there is the risk that Coriolis forces will deleteriously affect the working capacity of cosmonauts. One of the most important aspects of future space flights will be cosmonaut activity outside the spacecraft. It is suggested that a model space station be constructed and that the working capacity of personnel during parabolic flights be studied in preparation for tours of duty on permanent orbiting space stations which are likely to come into existence in the near future. On such space stations, crews would be trained for prolonged flights to other planets. Also, such space stations would provide the opportunity for more fully investigating the physiological effects of prolonged weightlessness on working capacity. It was concluded that higher standards should be established for the selection and examination of cosmonaut candidates for such future ventures.

[CD]

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L 50344-65

ACCESSION NR: AP5013308

ASSOCIATION: none

SUBMITTED: 10Feb65 ENCL: 00 SUB CODE: PH,LS

NO. REF SOV: 012 OTHER: 001 ATD PRESS: 4007

Card 4/4

KAS YAN, I.I.; KOPANEV, V.I.

Physiological mechanisms of the effect of weightlessness on the human organism. Izv. AN SSSR Ser. biol. 30 no.1:10-17 Ja-F '65. (MIRA 18:2)

VOLYNKIN, Yu.M.; ARUTYUNOV, G.A.; ANTIPOV, V.V.; ALTUKHOV, G.V.; BAYEVSKIY, R.M.; BELAY, V.Ye.; BUYANOV, P.V.; BRYANOV, I.I.; VASIL'YEV, P.V.; VOLOVICH, V.G.; GAGARIN, Yu.A.; GENIN, A.M.; GORBOV, F.D.; GORSHKOV, A.I.; GUROVSKIY, N.N.; YESHANOV, N.Kh.; YEGOROV, A.D.; KARPOV, Ye.A.; KOVALEV, V.V.; KOLOSOV, L.A.; KORESHKOV, A.A.; KAS'YAN, I.I.; KOTOVSKAYA, A.R.; KALIBERDIN, G.V.; KOPANEV, V.I.; KUZ'MINOV, A.P.; KAKURIN, L.I ; KUDROVA, R.V.; LEBEDEV, V.I.; LEBEDEV, A.A.; LOBZIN, P.P.; MAKSIMOV, D.G.; MYASNIKOV, V.I.; MALYSHKIN, Ye.G.; NEUMYVAKIN, I.P.; ONISHCHENKO, V.F.; POPOV, I.G.; PORUCHIKOV, Ye.P.; SIL'VESTROV, M.M.; SERYAPIN, A.D.; SAKSONOV, P.P.; TERENT'YEV, V.G.; USHAKOV, A.S.; UDALOV, Yu.F.; FOMIN, V.S.; FOMIN, A.G.; KHLEBNIKOV, G.F.; YUGANOV, Ye.M.; YAZDOVSKIY, V.I.; KRICHAGIN, V.I.; AKULINICHEV, I.T.; SAVINICH, F.K.; SIMPURA, S.F.; VOSKRESENSKIY, O.G.; GAZENKO, O.G., SISAKYAN, N.M., akademik, red.

[Second group space flight and some results of the Soviet astronauts' flights on "Vostok" ships; scientific results of medical and biological research conducted during the second group space flight] Vtoroi gruppovoi kosmicheskii polet i nekotorye itogi poletov sovetskikh kosmonavtov na korabliakh "Vostok"; nauchnye rezul'taty medikobiologicheskikh issledovanii, provedennykh vo vremia vtorogo gruppovogo kosmicheskogo poleta. Moskva, Nauka, 1965. 277 p. (MIRA 18:6)

YEREMIN, A.V.; KAS'YAN, I.I.; KOLOSOV, I.A.; KOPANEV, V.I.; LEBEDEV, V.I.

Human capacity for work in weightlessness. Izv. AN SSSR.Ser.biol. no.3:329-334 My-Je '65. (MIRA 18:5)

L 14246-66 RD

ACC NR: AT6003857 SOURCE CODE: UR/2865/65/004/000/0227/0236

AUTHOR: Voskresenskiy, A. D.; Gazenko, O. G.; Izosimov, G. V.; Kopanev, V. I.; Maksimov, D. G.; Yazdovskiy, V. I.

ORG: none

TITLE: Some physiological data for evaluating the condition and work capacity of cosmonauts under conditions of orbital flight

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy kosmicheskoy biologii, v. 4, 1965, 227-236

TOPIC TAGS: manned spaceflight, EEG, skin, cosmonaut, space psychology, brain, biosensor, bodily fatigue, vision

ABSTRACT: This paper presents some graphic results of biomedical data from the Vostok-5 (V. F. Bykovskiy) and Vostok-6 (V. V. Tereshkova) flights. These include records of EEG's, EOG's, and skin galvanometry.

In summing up these data, the authors observed that a distinguishing feature of brain bioelectricity during the first hours and days of the flight was the increase in the index of high-frequency oscillations. No increase in the index of low-frequency oscillations was observed. Also characteristic of the initial flight period were elevated oculomotor activity and a rise in the

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L 14277-66 FSS-2/EWT(1)/FS(v)-3 DD/RD

ACC NR: AT6003861

SOURCE CODE: UR/2865/65/004/000/0270/0289

AUTHOR: Kas'yan, I. I.; Kopanev, V. I.; Yazdovskiy, V. I.

ORG: none

TITLE: Reactions of cosmonauts to conditions of weightlessness

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy kosmicheskoy biologii, v. 4, 1965, 270-289

TOPIC TAGS: manned spaceflight, weightlessness, space physiology, biologic respiration, cosmonaut, physiologic parameter, EKG

ABSTRACT: The authors review and consolidate data obtained from the flights of Vostoks 2-6. These data are given in the enclosed graphs and tables. The authors conclude that an important future experimental problem will be to establish the optimum magnitude of artificial gravity which will overcome the deleterious effects of weightlessness during prolonged manned spaceflights. Orig. art. has: 5 figures and 8 tables. [ATD PRESS: 4091-F]

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ACC NR: AT6003861

Table 2. Changes in respiration rate (cycles/min) during various Vostok flight stages under conditions of weightlessness (average)

Flight Stage			Vostok - 2, G. S. Titov				Vostok - 3, A. G. Nikolayev				Vostok - 4, P. R. Popovich				Vostok - 5, V. F. Bykovskiy				Vostok - 6, V. V. Tereshkova			
			M	σ	C	Σ P	M	σ	C	Σ P	M	σ	C	Σ P	M	σ	C	Σ P	M	σ	C	Σ P
Prelaunch (p), 5 min			10,61	1,83	39,28	100,0	9,67	1,31	13,56	100,0	15,17	2,65	17,47	100,0	16,81	1,85	75,57	100,0	17,28	2,27	13,15	101,0
Weightlessness	Zone of 1st day	1	12,00	2,22	18,31	99,4	13,71	2,88	30,80	111,8	19,11	3,15	16,61	126,2	21,75	3,92	22,12	111,0	20,25	3,11	15,39	118,0
		7					11,41	2,03	17,78	118,3					18,00	2,07	13,44	99,6	21,75	2,61	12,03	123,1
	2nd day	13	16,17	3,31	23,61	82,4	11,00	1,70	16,33	113,8	14,33	2,00	11,32	129,0	18,07	2,71	15,0	107,0	22,50	3,18	13,82	133,3
		17	18,61	3,61	18,11	81,7	11,28 (16)	1,58	11,01	116,6	17,39	3,05	21,23	111,0	19,70	2,01	10,43	115,2	21,88	2,97	13,57	126,6
		23					10,88	3,11	28,61	112,5	18,35	3,82	5,01	103,0	21,75	2,69	12,35	170,3	21,00	1,19	5,68	121,3
	3rd day	29					9,5 (30)	1,73	21,01	77,56	15,00	3,40	23,07	98,8	11,00	2,63	20,25	61,2	21,00	1,06	8,80	128,1
		33					11,0 (32)	2,30	20,01	111,75	15,23 (31)	2,83	18,55	100,5	19,0 (35)	2,25	18,72	112,2	21,41	2,65	12,45	128,2
		38					12,00	2,81	22,50	128,2	11,80	2,70	18,17	98,0	18,54	1,82	8,72	110,2	21,54	1,57	8,16	121,0
	4th day	43					10,8	2,41	22,71	100,0	16,33 (38)	2,80	18,92	107,6	15,43	2,45	25,37	100,3	19,67	3,82	20,81	112,6
		51					13,0	3,26	21,93	131,1					18,23	2,61	15,65	101,7				
		56					11,7	2,76	23,72	120,0					18,25	1,22	6,82	101,4				
	5th day	61					9,73 (62)	2,34	23,74	100,0					17,00	1,41	8,31	101,0				
		67													18,06	2,51	13,96	112,0				
		71													19,17	1,45	7,72	113,9				
	Beginning of 6th day	76													13,5	2,52	18,61	80,2				
		81													17,51	2,45	13,98	101,2				

Note: M - mean arithmetic; σ - mean quadratic error; C - variation coefficient

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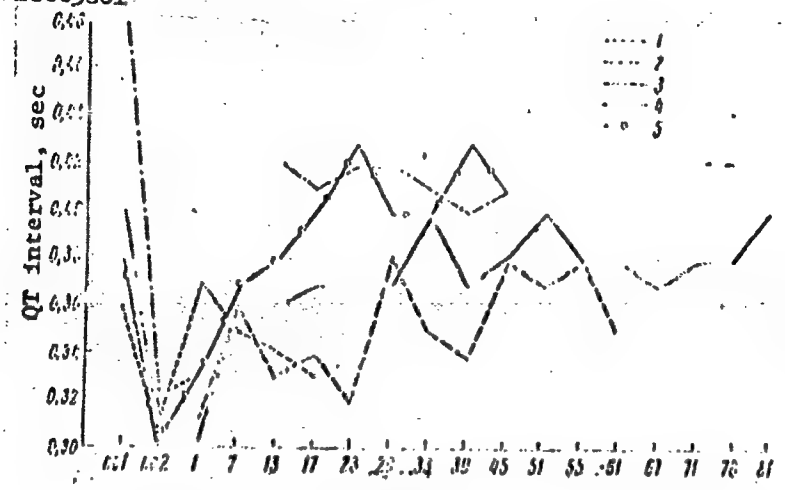
ACC NR: AT6003861



Orbit no.1

Fig. 1. Change in the duration of the EKG QT interval in Vostok cosmonauts
1 - Vostok-2, G. S. Titov; 2 - Vostok-3, A. G. Nikolayev; 3 - Vostok-4, P. R. Popovich; 4 - Vostok-5, V. F. Bykovskiy; 5 - Vostok-6, V. V. Tereshkova.

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ACC NR: AT6003861

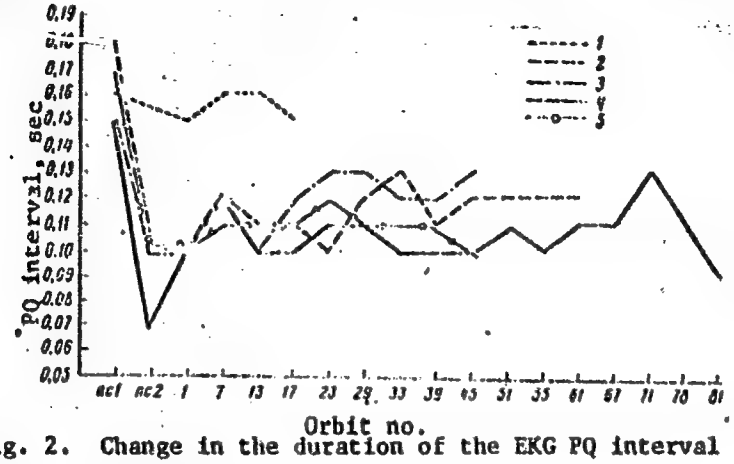

Fig. 2. Change in the duration of the EKG PQ interval in Vostok cosmonauts

1 - Vostok-2, G. S. Titov; 2 - Vostok-3, A. G. Nikolayev; 3 - Vostok-4, P. R. Popovich; 4 - Vostok-5, V. F. Bykovskiy; 5 - Vostok-6, V. V. Tereshkova.

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L 14277-66

ACC NR: AT6003861

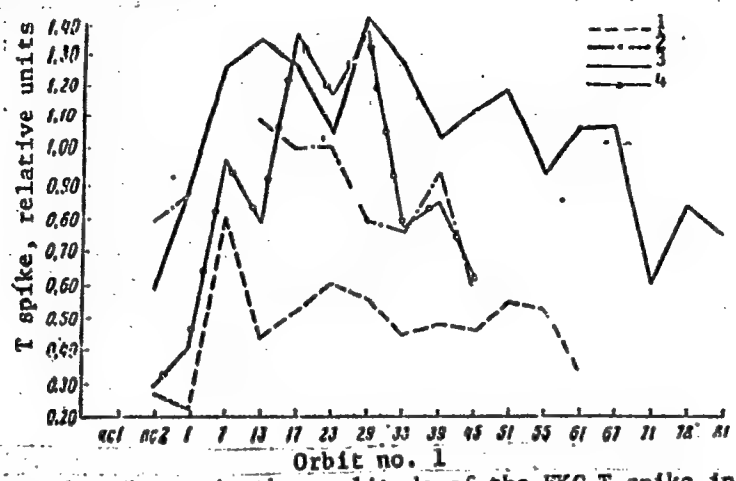

Fig. 3. Change in the amplitude of the EKG T spike in Vostok cosmonauts

1 - Vostok-3, A. G. Nikolayev; 2 - Vostok-4, P. R. Popovich; 3 - Vostok-5, V. F. Bykovskiy; 4 - Vostok-6, V. V. Tereshkova.

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L 14277-66

ACC NR: AT6003861

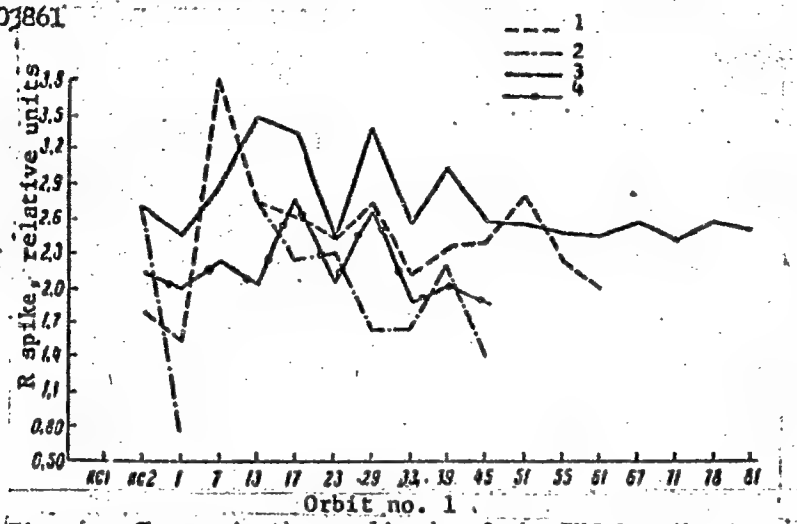

Fig. 4. Change in the amplitude of the EKG R spike in Vostok cosmonauts

1 - Vostok-3, A. G. Nikolayev; 2 - Vostok-4, P. R. Popovich; 3 - Vostok-5, V. F. Bykovskiy; 4 - Vostok-6, V. V. Tereshkova.

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L 14277-66
ACC NR: AT6003861

SUB CODE: 06 / SUBM DATE: none / ORIG REF: 027 / OTH REF: 018

0

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Card 9/9

YAZDOVSKIY, V.I.; YEMEL'YANOV, M.D.; VASIL'YEV, P.V.; KOPANEV, V.I.

Some results of medical and biological studies conducted during training and flight of the astronauts. Probl. kosm. biol. 4:237-247 '65. (MIRA 18:9)

YUGANOV, Ye.M.; GORSHKOV, A.I.; KAS'YAN, I.I.; BRYANOV, I.I.; KOLOSOV, I.A.; KOPANEV, V.I.; LEBEDEV, V.I.; POPOV, N.I.; SOLODOVNIK, F.A.

Vestibular reactions of astronauts during the "Voskhod" spaceship flight. Izv. AN SSSR. Ser. biol. no.6:877-883 N-D '65. (MIRA 18:11)

17411-66 EEC(k)-2/EWT(1)/EWA(d)/FSS-2 SCTB TT/DD/RD/GW

ACC NR: AP6003450 SOURCE CODE: UR/0216/66/000/001/0003/0013

AUTHOR: Kas'yan, I. I.; Kolosov, I. A.; Kopanev, V. I.; Lebedev, V. I.

ORG: none

30
B

TITLE: Physiological reactions of cosmonauts in free space

SOURCE: AN SSSR. Izvestiya. Seriya biologicheskaya, no. 1, 1966, 3-13

TOPIC TAGS: Voskhod 2, parabolic flight, Leonov, Belyayev, weightlessness effect, acceleration effect, nystagmus, motor analyzer

ABSTRACT: The physiological effects of the various training programs in preparation for the Voskhod-2 flight were studied, with special attention given to EVA operations during parabolic flights which lasted 25—30 sec. These exercises by both Leonov and Belyayev took place in a mockup of Voskhod-2 which was situated in the cabin of the flying laboratory. Prior to each operation, Leonov had to locate his backpack containing the automatic life-support systems, attach it to himself, check out the hardware with Belyayev, and equalize the air-lock and cabin pressure. After this, he would enter the air-lock, don his hermetic helmet, check the position of the light filters, the oxygen supply, and the spacesuit for leaks. Belyayev would then close the cabin hatch, depressurize the air-lock, and open its hatch through which Leonov would then egress. Leonov would then conduct as many egress and return operations as necessary. It was found that to perfect moving through the lock

Card 1/8 UDC: 612:629.195.2

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ACC NR: AP6003450

took no less than 2—3 parabolic flights. The results of these tests are shown in Table 1. To perfect approach and especially egress required considerable practice; Leonov required 6 practice egresses and 4 practice approaches. His first three egress operations took 19—20 sec in contrast to 6—8 sec in subsequent runs. Leonov's impressions during one of the last training flights were as follows: "The flight went well. I did not feel any uncomfortable sensations. They were the same as those experienced in earlier flights. The spacesuit limits movements somewhat, and the helmet limits the visual field. The approach to the lock was easily executed since pulling on the umbilicus provided fulcrum and established the direction of motion. Approaches and egresses can be smoothly executed. Apparently, any operation can be completed during weightlessness without noticeable disruption of coordination when there is the smallest point of support." Some results of physiological observations made during training flights are given in Table 2, which shows some differences in the reactions of the cosmonauts. Table 3 shows that cardiovascular reactions were as expected. Motor activity studied during the training flights showed that Leonov had a tendency to take slightly longer than normal to complete various operations during acceleration and weightlessness, as shown in Table 4. The results of vestibular tests before and after training flights are given in Table 5; they demonstrated that the vestibular stability of Leonov and Belyayev was sufficiently high. It was concluded that the need for the on-the-ground modeling of cosmonaut activities has increased as has the need for spacecraft and space-station mockups which can be used during parabolic flights. These

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Table 1. Proficiency of egresses from and approaches to the lock by cosmonaut A. A. Leonov during parabolic flights on a special aircraft

Egress from the lock			Approach to the lock		
Repetitions	Time, sec	Proficiency	Repetitions	Time, sec	Proficiency
1	20	Turn backwards	1	8	Approach to the side
2	10	Turn to the side	2	7	The same " "
3	20	" "	3	6	
4	16	Turn forward	4	10	Smooth approach, without turn
5	12	Turn to the side	5	10	The same
6	12	Smooth egress, without turn	6	10,7	" "
7	8	The same	7	8	" "
8	8	" "	8	10	" "
9	12	" "	9	10	" "
10	8	" "	10	10	" "
11	8	" "	11	10	" "
12	8	" "	12	7	" "
13	16	Slight turn to the side	13	6	Approach to the side
14	8	Slight turn backwards	14	8	Smooth approach, without turn
15	8	Smooth egress, without turn	15	8	The same
16	8	" "	16	8	" "
17	8	" "	17	8	" "
18	8	" "	18	8	" "
19	8	" "	19	8	" "
20	8	" "	20	8	" "

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Table 2. Reactions of cosmonauts P. I. Belyayev and A. A. Leonov before, during, and after parabolic flight

Cosmonauts	Flight No.	Before flight: Coloring of facial skin	Before flight: Motor activity	Before flight: Speech activity	During flight: Coloring of facial skin	During flight: Motor activity	During flight: Speech activity	During flight: Quality of functions of during process	After flight: Coloring of facial skin	After flight: Motor activity	After flight: Speech activity
P. I. Belyayev	1	Normal			Normal	Decreased	Decreased	Highly capability	Normal	Decreased	Decreased
	2					Normal	Normal	Capability		Normal	Normal
	3					•	•	The same capability		•	•
A. A. Leonov	1				Hyperemia	Increased	Increased	Capability	Hyperemia	Increased	Increased
	2		•		•	•	Normal	The same capability	Coloring normal	•	Increased
	3				Normal	Normal	•	• •	Normal	Normal	

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Table 3. Change of pulse and respiration rates in cosmonauts during training flights on a weightlessness parabola (In the numerator—ranges of variation in pulse rate, in the denominator—of respiration rate)

Cosmonauts	Flight No.	Before Flight	In flight: Horizontal segment	In flight: Acceleration	In flight: Weightlessness	In flight: Acceleration	After flight
Brief weightlessness (immobilization in working location)							
P. I. Belyayev	1	84—90 / 18—24	90—96 / 15—18	100—114 / 18—26	70—89 / 16—18	102—120 / 19	84 / 18
A. A. Leonov	1	54—60 / 21—24	66—72 / 18—24	84 / 18	60—70 / 18—21	84 / 24	66 / 18
Brief weightlessness (perfecting elements of egress and ingress)							
P. I. Belyayev	1	64 / 12	72—78 / 14—14	80—88 / 16—16	76—78 / 14—14	84—88 / 16—18	70 / 12
	7	68 / 12	70—86 / 12—16	80—100 / 14—20	76—88 / 12—16	80—100 / 14—20	78 / 12
A. A. Leonov	1	68 / 12	76—90 / 14—22	80—102 / 16—24	76—90 / 14—20	80—108 / 18—26	80 / 14
	7	64 / 12	70—84 / 12—14	80—90 / 14—16	78—84 / 12—14	82—96 / 14—16	76 / 12

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Table 4. Data concerning the motor activity of cosmonauts during flights on Kepler's parabola (averaged data)

Cosmonauts	Total time of execution of complex movement on the coordinograph (sec)				Time of touching "pencil" to terminal of the coordinograph (sec)			
	On ground	During acceleration before weightlessness	During weightlessness	During acceleration after weightlessness	On ground	During acceleration before weightlessness	During weightlessness	During acceleration after weightlessness
P. I. Belyayev	4,8 / 4,72—4,88	3,98 / —	4,29 / 4,08—4,50	3,16 / —	0,56	0,27	0,34	0,27
A. A. Leonov	3,9 / 3,56—4,30	7,12 / 5,68—8,50	5,18 / 4,44—5,92	7,22 / 6,48—7,96	0,25	0,45	0,36	0,39

Note: Ranges of variations during execution of complex movements are listed in the denominator, and averaged data in the numerator.

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Table 5. Change in the duration of postrotational nystagmus and counterrotational illusion (sec) before and after parabolic flights, by Kepler trajectory

Cosmonauts	Flight number	Postrotational nystagmus		Counterrotational illusion	
		Before flight	After flight	Before flight	After flight
P. I. Belyayev	1	12	10	10	7
	7	9	6	8	5
A. A. Leonov	1	15	12	12	11
	7	10	6	9	5

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ACC NR: AP6003450

flights would entail training cosmonauts to connect joints and conduct various repair operations both inside and outside (on the surface) the mockup (welding, cutting, and riveting, etc.). Orig. art. has: 6 tables and 4 figures. [CD]

SUB CODE: 06/ 22/ SUBM DATE: 18Aug65/ ORIG REF: 007/ ATD PRESS: 4206

Card 8/8 nst

L 23975-66 FSS-2/EWT(1)/EEC(k)-2/EWA(d) SCTB TT/DD/RD/GW

ACC NR: AT6003858 SOURCE CODE: UR/2865/65/004/000/0237/0247

AUTHOR: Yazdovskiy, V. I.; Yemel'yanov, M. D.; Vasil'yev, P. V.; Kopanev, V. I.

ORG: none

TITLE: Some results of medicobiological studies conducted during preparation and flight of the astronauts V. F. Bykovsk and V. V. Tereshkova

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy kosmicheskoy biologii, v. 4, 1965, 237-247

TOPIC TAGS: space medicine, space medicine equipment, space physiology, astronaut

ABSTRACT: The program of study is described and results of medical observations during June 14-19, 1963 are reported. The study program includes the long term effect of cosmic flight on the human organism, psychophysiologic capacities and working capacity of humans under such conditions, reactions of the female organism, the 24 hour physiologic processes during cosmic flight, effectiveness of methods for selecting and training astronauts, analysis of the medical-biological monitoring system in the cabin, the microclimate of the spaceship, and the

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ACC NR: AT6003858

effectiveness of systems providing for survival and safety. In selecting astronauts the compensatory work of the organism was most important. Under simulated cosmic conditions, women were seen to react least during the proliferative phase of the ovarian cycle, with some reaction during ovulation. Training increased resistance to the effect of cosmic factors and strengthened will power and the neuropsychic system. Radiation was low; the dosimeters showed about 80 and 44 millirad respectively. The astronauts received food in amounts of 2500-2900 calories per day. The microclimate in the cabin was satisfactorily maintained as to temperature, pressure and oxygen (13-26°C, 250-60% humidity, 22-28% oxygen, to 0.50% CO_2 and 740-780 mm Hg pressure). Medical controls included ECG, EEG, skin galvanic reaction, respiratory and pulse rates, tests for vestibular and vegetative insufficiency and observation by television. Before and at the start of flight the respiratory and pulse rates increased from 68 and 84 to 137 and 144, during the first minutes of flight they increased to 154 and 157, and then they returned to normal after several hours. The EEG showed a tendency for substitution of low frequency waves and a later decrease of amplitude of bioelectric rhythms; in the woman an increase of low frequency potentials was seen. All medical and biological [illegible]

Card 2/2 [illegible] SUBM DATE: none [illegible] none.

Vostok 5 12 Vostok 6 12

EWT(1) SCTB DD/GD

ACC NR: AT6036588

SOURCE CODE: UR/0000/66/000/000/0216/0217

AUTHOR: Komendantov, G. L.; Kompanets, V. S.; Kopanev, V. I.; Poleshchuk, S. I.; Rassolov, N. A.; Chirkin, M. D.

ORG: none

TITLE: Further development of the otolithic theory of motion sickness [Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24 to 27 May 1966]

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 216-217

TOPIC TAGS: biologic acceleration effect, motion sickness, coriolis acceleration, vestibular analyzer, unconditioned reflex, visual analyzer, central nervous system

ABSTRACT: The otolithic theory of motion sickness (V. I. Voyachek, 1909-1958) is widely recognized. Its basic assumptions are: 1) the universal nature of motion sickness (it can arise during any kind of motion); 2) the summation of reactions (cumulation) as a mechanism of the development of motion sickness; 3) the vestibular, proprioceptive, visual, and cutaneous mechanical receptors participate in the reflex mechanism of motion sickness development during which, the otolithic component of the vestibular analyzer assumes the basic role; 4) the most essential cause of motion sickness is vertical displacements of the human body which address otolithic receptors; 5) the conditioned reflex mechanism of motion sickness is supplementary; 6) the condition of the nervous system plays an important role in the development of motion sickness; 7) various external conditions (high air temperature, smells, etc.) influence the development of motion sickness; 8)

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ACC NR: AT6036588

the resistance of the organism to motion sickness can be built up by repeated exposure to its causative mechanisms (training).

The investigation by the authors led to the establishment of the following: 1) the existence of a phase in the development of motion sickness; 2) a functional fluctuation, the amplitude of which changes as a function of the developmental phase of this condition; 3) an additional mechanism of motion sickness (disrupted systemic function); 4) the development of rocking illusions accompanied by compensatory motor reactions; 5) peculiarities of the course of motion sickness at altitudes of 2000, 3000, 4000, and 5000 m ("elevation" in a pressure chamber); 6) shifts in the excitability and lability of the visual analyzer in the latent form of motion sickness; 7) shifts in atrioventricular conductivity during various phases of motion sickness; 8) the influence of dibasol on the course of the latent form of motion sickness; 9) the inhibition of lifting reflexes (according to EMG data) during the prolonged, standard oscillation of experimental animals and the development of these reactions when the oscillation regimen is altered; and finally, the prospect of applying motion sickness to the discovery of functional insufficiencies, e.g., using conditioned reflex models of motion sickness to reveal statokinetic defects in human subjects. [W.A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

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ACC NR: AT6036560 SOURCE CODE: UR/0000/66/000/000/0166/0167

AUTHOR: Yeremin, A. V.; Kopanev, V. I.; Azhayev, A. N.; Lysakov, N. A.; Zhadovskaya, S. V.

ORG: none

TITLE: The effect of high temperatures on human functional capacities [Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24 to 27 May 1966]

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 166-167

TOPIC TAGS: hyperthermia, human physiology, work capacity

ABSTRACT: Flight crews in southern parts of the country, like specialists working in so called hot shops, e.g., steel welders, open hearth plant workers, and so forth, are often subjected to the effects of high ambient air pressures. In view of the practical implications of the problem and the inadequacy of its treatment in literature, attempts were made to study the functional capacity of humans exposed for fairly long periods to high temperature conditions.

Three series of investigations were conducted. Unclothed subjects were exposed for an hour to air temperatures of 440C

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(series 1), 460C (series 2), and for 30 min to air temperature of 480C (series 3). Relative humidity in the thermo hamber was kept between 15% and 25%, and velocity of air movement between 0.1 and 0.2 m/sec.

Work capacity was evaluated by means of correction tablet tests [A. A. Genkin et al. (1963)], grip strength dynamometry, and a graphic test [Frukuda (1959)]. Visual analyzer function was studied by determining the electrical excitation threshold of the eye, flicker fusion frequency, and the information transmission capacity of the visual analyzer [F. P. Kosmolinskiy, Ye. A. Derevyanko (1962), A. A. Genkin et al. (1963)]; vestibular analyzer function was studied by determining the duration of postrotational nystagmus and the counterrotation illusion, and also the area of displacement while walking in place with eyes closed [Frukuda (1959)]. In addition, pulse and respiration frequencies, electrocardiograms, blood pressure, and body and skin temperature at twelve points were recorded during all experiments, and some of the components of heat exchange were calculated. Not counting the control group (6 men), experiments were conducted on 39 subjects, 14 in series 1, 13 in series 2, and 11 in series 3. It was established that even a

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60 min exposure to an air temperature of 440C decreased work capacity (error increase of 2.4% on the correction test, 14.9% on the graphic test, and so forth); the information transmission capacity of the visual analyzer decreased by 13.5%; decreases were also seen in the electrical excitation threshold of the eye and in the weight of the subjects (by 200 g); increases were seen in body temperature (by 0.3C), the frequency of cardiac contractions (by 14/min), and so forth. In series 2 and 3, human functional capacity showed a sharp drop, which was characterized by more pronounced shifts in a number of investigated functions. Thus, at +60C the number of errors increased by 15.6%; at +80C, by 58%; and so forth.

The above data show that even a single hour's exposure of an unclad human to a temperature of +40C affects work capacity; this must be taken into account in organizing industrial medical support and in devising measures to improve work conditions and work schedules in hot climates. [W.A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

Card 3/3

KOPANEVA, L.M.

Orthoptera of the main Caucasus Range in the upper reaches of the Teberda River and their vertical distribution. Zool. zhur. 41 no.3:378-383 Mr '62. (MIRA 15:3)

1. Department of Zoology, State Pedagogical Institute of Leningrad.
(Caucasus--Orthoptera)

KOPANEVA, L.M.

Habitats of Orthoptera in the upper Teberda Valley in the northern Caucasus and their seasonal and vertical shifts. Ent. obozr. 42 no.3:564-571 '63. (MIRA 17:1)

1. Zoologicheskiy institut AN SSSR, Leningrad.

KOPANEVICH, N.

The discussion is on the establishment of work norms. Sov. profsoiuzy 7 no. 7:39-42 Jl '58. (MIRA 11:8)
(Production standards)

25(1) PHASE I BOOK EXPLOITATION SOV/2383

Akademiya nauk SSSR. Komissiya po tekhnologii mashinostroyeniya

Avtomatizatsiya mashinostroitel'nykh protsessov. t. II: Privod i upravleniye rabochimi mashinami (Automation of Machine-building Processes. Vol.2: Drives and Control Systems for Process Machinery) Moscow, Izd-vo AN SSSR, 1959. 370 p. Errata slip inserted. 5,000 copies printed.

Ed.: V.I. Dikushin, Academician; Ed. of Publishing House: D.N. Ioffe; Tech. Ed.: I.P. Kuz'min.

PURPOSE: This book is intended for engineers dealing with automation of various machine-building processes.

COVERAGE: This is the second volume of transactions of the second Conference on Overall Mechanization and Automation of Manufacturing Processes held September 25-29, 1956. The present volume consists of three parts, the first dealing with automation of engineering measuring methods. The subjects discussed include automatic control of dimensions of machined parts, inspection methods for automatic production lines, in-process inspection devices, application of electronics in automating linear measuring processes, and machines for automatic inspection of bearing races. The second part deals with automatic drives and control systems for process machinery, including application of digital computers in the control of metal-cutting machine tools, reliability of relay systems, application of gas-tube frequency converters in the control of induction motor speeds, magnetic amplifiers and their use in automatic systems, hydraulic drives, and ultrasonic vibrators. Part three deals with mechanisms of automatic machines and automatic production lines. The subjects discussed include linkage, indexing, and Geneva-wheel-type mechanisms, friction drives, automatic loading devices, diaphragm-type pneumatic drives, various auxiliary devices for automatic production lines, and methods of design and accuracy of cams. No personalities are mentioned. There are no references.

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PHASE I BOOK EXPLOITATION SOV/5839

Berklayd, I. M., V. S. Vikhman, A. T. Draudin, N. Ye. Kopanevich, G. I. Ovcharenko, Z. L. Tubenshlyak, G. V. Chasovnikov and Ya. M. Tseytlin

Kontrol' nyye avtomaty ([Dimensional-] Control Automatics) Moscow, Mashgiz, 1961. 193 p. (Series: Progressivnyye sredstva kontrolya razmerov v mashinostroyenii) Errata slip inserted. 4500 copies printed.

Eds. of Series: B. S. Bayburov, M. I. Kochenov, and D. D. Malyy; Scientific Ed.: V. S. Vikhman, Doctor of Technical Sciences; Ed. of Publishing House: L. P. Stroganov, Engineer; Tech. Ed.: R. I. Dobritsyna; Managing Ed. for Literature on Means of Automation and Instrument Construction: N. V. Pokrovskiy, Engineer.

PURPOSE: This book is intended for designers and technical personnel in machine plants.

Card 1/

Control Automatics SOV/5839

COVERAGE: The book contains information on the most important Soviet late-model automatics for the inspection, sorting, and automatic control of machine parts according to their geometric parameters. The book is part of a series devoted to modern means of dimensional control and was recommended by the Commission on the Introduction of Advanced Control Methods and Means in the Machine Industry of the State Scientific-Technological Committee of the Council of Ministers of the USSR. Attention is given to the construction, operation, and specifications of a number of dimensional-control automatics for various purposes. Photographs and layout diagrams are included. No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

Card 2/3

KOPANEVICH, P.P.

Apiculture and insecticides. Priroda 51 [i.e. 52] no.5:114 '63. (MIRA 16:6)

1. Moskovskaya veterinarnaya akademiya.
(Insects, Injurious and beneficial--Biological control)

KOPANEVICH, P.P.

Bees and sounds. Priroda 52 no.6:117-118 '63. (MIRA 16:6)

1. Moskovskaya veterinarnaya akademiya.
(Bees) (Insects—Behavior)